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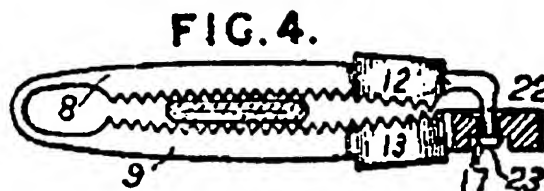
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Funis clamp

Patent number: GB886356
Publication date: 1962-01-03
Inventor:
Applicant: DONALD HUNTER KARIHER;;
THOMAS WILLIAMS SMITH
Classification:
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- european: A61B17/122
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Priority number(s): USX886356 19580315

Abstract of GB886356

886,356. Surgical clamps.
KARIHER, D. H., and SMITH, T. W. March 6, 1959 [March 15, 1958], No. 7914/59. Class 81 (2). [Also in Group XXV] A surgical clamp comprises a pair of synthetic plastic arms 8, 9 joined together at one end, the free end of one arm carrying an oval button 23 and the free end of the other arm having an oval aperture 17 of helical configuration for reception of the button, the longitudinal axis of the aperture at the entrance being angularly disposed to the longitudinal axis of the aperture at the exit. Each arm has a finger piece 12, 13 and teeth along its inner surface. The clamp is made of elastic material so that a lateral projection 22 which carries the button rotates to permit the button to pass through



the aperture.

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PATENT SPECIFICATION

DRAWINGS ATTACHED

886356



Date of Application and filing Complete Specification:
March 6, 1959. No. 7914/59.

Application made in United States of America on March 15, 1958.

Complete Specification Published: Jan. 3, 1962.

Index at Acceptance:- Classes 81(2), YX6; and 44, BE4B6.

International Classification:- A61b. F06b.

COMPLETE SPECIFICATION

Funis Clamp

We, DONALD HUNTER KARIHER and
THOMAS WILLIAMS SMITH both of
1577 South Avenue, Rochester, New York,
United States of America and both citi-
zens of the United States of America,
do hereby declare the invention, for
which we pray that a patent may be
granted to us and the method by which
it is to be performed, to be particu-
larly described in and by the following
statement:-

This invention relates to clamping
devices, and more particularly to
devices of such type which may be used
by the surgeon, as a funis clamp.

According to the invention a funis
clamp for surgical use is constituted by
a pair of arms joined together at one of
their ends and fabricated of a synthetic
plastic, an oval-shaped button carried
by the free end of one arm of said
member, the free end of the other arm of
said member having an aperture of oval
form extending therethrough in a helical
configuration for the reception therein
of said button, said aperture having an
entrance in substantial registry with
said button when the device is in an
open position, the longitudinal axis of
the aperture at the entrance to said
aperture being angularly disposed to the
longitudinal axis of the aperture at the
exit from said aperture.

One embodiment of the invention is
illustrated in the accompanying drawing,
wherein:

Figure 1 is a side elevational view
of a clamp of this invention.

Figure 2 is a top plan view of the
device.

Figure 3 is an end view of the device.

Figure 4 is an elevational view of
the device shown in operative position
securing therein material to be clamped
such as an umbilical cord.

[Pric

Figure 5 is an enlarged fragmentary
plan view of the free end of one arm of
the device.

Figure 6 is an enlarged fragmentary
elevational view of the free end of
the other arm of the device.

Figure 7 is a sectional view taken
along lines 7-7 of figure 6.

The device constituting this inven-
tion comprises a pair of arms 8 and 9
secured together at their one end by a
hinge portion 10 which is arcuately
shaped in order to equalize the stress
imparted thereto, the arms being
normally spaced apart at the free ends
and assuming a V-shape. The arms 8 and
9 are each provided with thumb de-
pressor surfaces 12 and 13, respectively.
The arms 8 and 9 are further provided
with a plurality of teeth 14 and 15,
respectively, which are disposed so
that the teeth 14 mesh with the teeth 15
when the two arms are pressed into con-
tact along their length. The arm 9
has at its free end a flattened exten-
sion 16 having an oval shaped hole 17
extending therethrough in the form of
a helical configuration. The hole 17
has, therefore, an entrance 18 having
a longitudinal axis angularly disposed
relative to the longitudinal axis of
its exit 19. It is preferable that
the angular relation between the longi-
tudinal axes be approximately 45 degrees.

A tapered guide recess 20 is pro-
vided in the inner surface of the extension
16 and communicates with the entrance
18. A recess 21 is provided on the
outer surface of the extension 16 and
communicates with the exit 19.

A lateral projection 22 is formed
at the free end of the arm 8 and ter-
minates in an oval-shaped button 23
having tapered sides 24.

In using this novel device to clamp

an umbilical cord, such as the cord 25 as is illustrated in figure 4, the surgeon should, with the clamp in an open position, locate the cord so that it is positioned between the arms 8 and 9 and as near the hinge portion 10 as is practical. With the clamp in one hand the surgeon may then exert pressure by depressing the thumb depressor surfaces 12 and 13. This can best be accomplished by using the thumb and forefinger. The arms 8 and 9 are thereby moved into a closed position and the teeth 14 and 15 function to prevent any slippage between the cord and the arms 8 and 9.

The compression exerted by the hand of the operator as above mentioned is sufficient to interlock the free ends of the arms 8 and 9. Since the oval-shaped button 23 is in substantial registration relative to the entrance 18 of the oval-shaped hole 17, it may freely enter the entrance 18 thereof and traverse the thickness of the flattened extension 16, finally emerging through the exit 19. In passing through the hole 17, the button 23 is caused to be rotated approximately 45 degrees due to the spiral configuration therein. Being that the exit 19 of the hole 17 is disposed so that its longitudinal axis is angularly related to the longitudinal axis of the entrance 18, the button 23 is locked in position and is prevented from returning back through the hole 17. It should be obvious, of course, that the physical characteristics of the material forming the lateral projection 22 cause the latter to counter-rotate so that the button 23 resumes its normal position in substantial registration with the entrance 18. The size of the button 23 is preferably slightly smaller than the size of the hole 17. Furthermore, it should be noted that the tapered sides 24 of the button 23 function to facilitate the passage of the button 23 through the hole 17. The tapered recess 20 obviously functions to guide the passage of the button 23 towards the entrance 18 of the hole 17. When the clamp is in its closed position, as can be best seen in figure 4, the button 23 is accommodated within the recess 21 so that a substantially flush relationship exists between the surface of the button 23 and the outer surface of the extension 16.

The compression of the cord 25 is sufficient so as to produce hemostasis as is well-known to those skilled in the art. Due to the flexible and somewhat elastic properties of the material from which the clamp, as a whole and

particularly the arms 8 and 9, is fabricated, it has the characteristic of being automatically compensating for any shrinkage in the cord 25. Thus, when the umbilical cord is clamped in position, the arms 8 and 9 become slightly bent under flexion because of the physical size of the cord clamped therein. Therefore, as the cord diminishes in diameter, the arms 8 and 9 move closer together in a state of flexion and continue to maintain the required pressure on the cord 25. After the clamp has been in position on the cord for a predetermined period of time it may be easily removed by severing the projection 22 adjacent to the button 23, or by cutting through the substance of the hinge 10.

The funis clamp described herein has been found extremely satisfactory when fabricated of synthetic plastic, having the physical characteristics of being relatively flexible, elastic, and of sufficient strength. The fabricated plastic clamp may be produced by mass production techniques at an extremely low cost and, therefore, may be marketed as an inexpensive disposable item.

Thus, a funis clamp has been provided which can be applied by the surgeon quickly with one hand and without the necessity of utilizing other tools, such as a forceps. Furthermore, the operator does not require assistance from anyone else in its application. Since the device is a unitary piece it may be sterilized very simply. It should be noted that the interlock mechanism incorporated in the device precludes the possibility of the arms 8 and 9 being accidentally disengaged, thereby releasing the pressure prematurely.

Although the funis clamp constituting this invention has been described herein in reference to its use as a means for clamping an umbilical cord, its scope and application is sufficiently diversified to include the clamping of other organs which may require a positive action clamping device.

WHAT WE CLAIM IS:-

1. A funis clamp for surgical use constituted by a pair of arms joined together at one of their ends and fabricated of a synthetic plastic, an oval-shaped button carried by the free end of one arm of said member, the free end of the other arm of said member having an aperture of oval form extending therethrough in a helical configuration for the reception therein of said button, said

aperture having an entrance in substantial registry with said button when the device is in an open position, the longitudinal axis of the aperture at
5 the entrance to said aperture being angularly disposed to the longitudinal axis of the aperture at the exit from said aperture.

2. The improved funis clamp sub-
10 stantially as herein described with

reference to the accompanying drawings.

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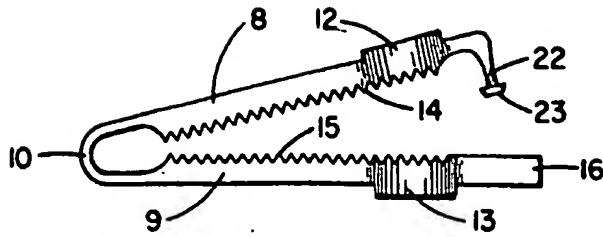


Fig. 1

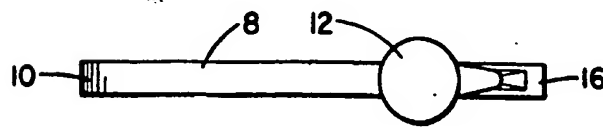


Fig. 2

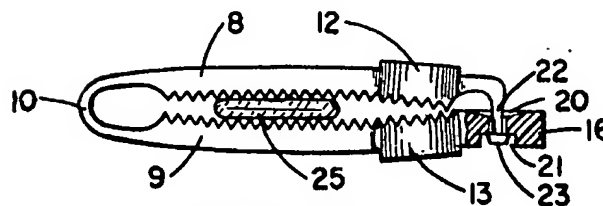


Fig. 4

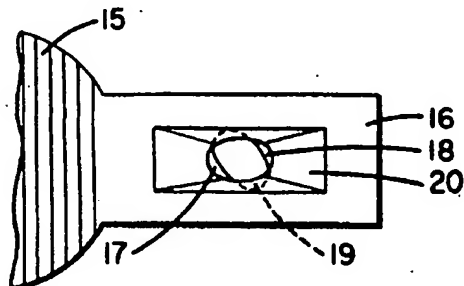


Fig. 5

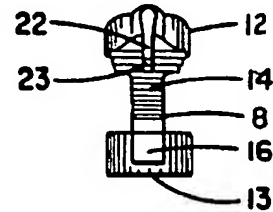


Fig. 3

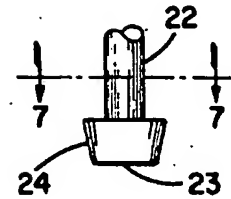


Fig. 6

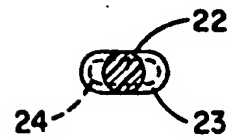


Fig. 7